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For six persons there appear to be two independent solutions, the one previously given by Dr. Judson, and the following:

ABCDEF,	ACEBDF,
ABDCFE,	ACBEFD,
ABEDFC,	ADECBF,
ABFECD,	ADBFCE,
ACDFBE,	AEDBCF.

192. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College Defiance, O.

What is the difference between the squares of the two *infinite* continued fractions $\left(3+\frac{1}{6+\text{etc.}}\right)$ and $\left(2+\frac{1}{4+\text{etc.}}\right)$?

Solution by G. B. M. ZERR, A. M., Ph. D., Parsons, W. Va., and L. E. NEWCOMB, Los Gatos, Cal.

Denote the value of the continued fractions by x and y.

$$\text{Then } x-3=\frac{1}{6+x-3}=\frac{1}{x+3},\ \therefore x^2-9=1,\ x^2=10,\ x=\sqrt{10};$$

$$y-2=\frac{1}{4+y-2}=\frac{1}{y+2},\ \therefore y^2-4=1,\ y^2=5.\ y=\sqrt{5}.$$

$\therefore x^2-y^2=5=$required result.*

194. Proposed by L. E. DICKSON, Ph. D., The University of Chicago.

In the determination of the canonical forms of Abelian transformations modulo p, one is led to the type $[b_1, b_2, b_3]$:

$$\xi_1'=\xi_1,\ \eta_1'=b_1\xi_1+\eta_1+b_2\xi_2+\eta_2+b_3\xi_3+\eta_3,\ \xi_2'=\xi_2-\xi_1,$$
$$\eta_2'=\eta_2+b_2\xi_2,\ \xi_3'=\xi_3-\xi_1,\ \eta_3'=\eta_3+b_3\xi_3.$$

Find its period and determine the conditions under which it is conjugate with $[c_1, c_2, c_3]$ under Abelian transformation.

Solution by PROPOSER.

By mathematical induction, we verify that the kth power of $[b_1, b_2, b_3]$ is

$$\xi_1'=\xi_1,\ \eta_1'=[kb_1-\tfrac{1}{6}k(k^2-1)(b_2+b_3)]\xi_1$$
$$+\eta_1+\tfrac{1}{2}k(k+1)(b_2\xi_2+b_3\xi_3)+k\eta_2+k\eta_3,$$
$$\xi_2'=\xi_2-k\xi_1,\ \eta_2'=\eta_2+kb_2\xi_2-\tfrac{1}{2}k(k-1)b_2\xi_1,$$
$$\xi_3'=\xi_3-k\xi_1,\ \eta_3'=\eta_3+kb_3\xi_3-\tfrac{1}{2}k(k-1)b_3\xi_1.$$

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*Solutions based on the following interpretations are desirable. ED.

$$3+\cfrac{1}{6+\cfrac{1}{12+\cfrac{1}{24+\text{etc.}}}}\qquad 2+\cfrac{1}{4+\cfrac{1}{8+\cfrac{1}{12+\text{etc.}}}}\qquad 3+\cfrac{1}{6+\cfrac{1}{9+\cfrac{1}{12+\text{etc.}}}}\qquad 2+\cfrac{1}{4+\cfrac{1}{6+\cfrac{1}{12+\text{etc.}}}}$$